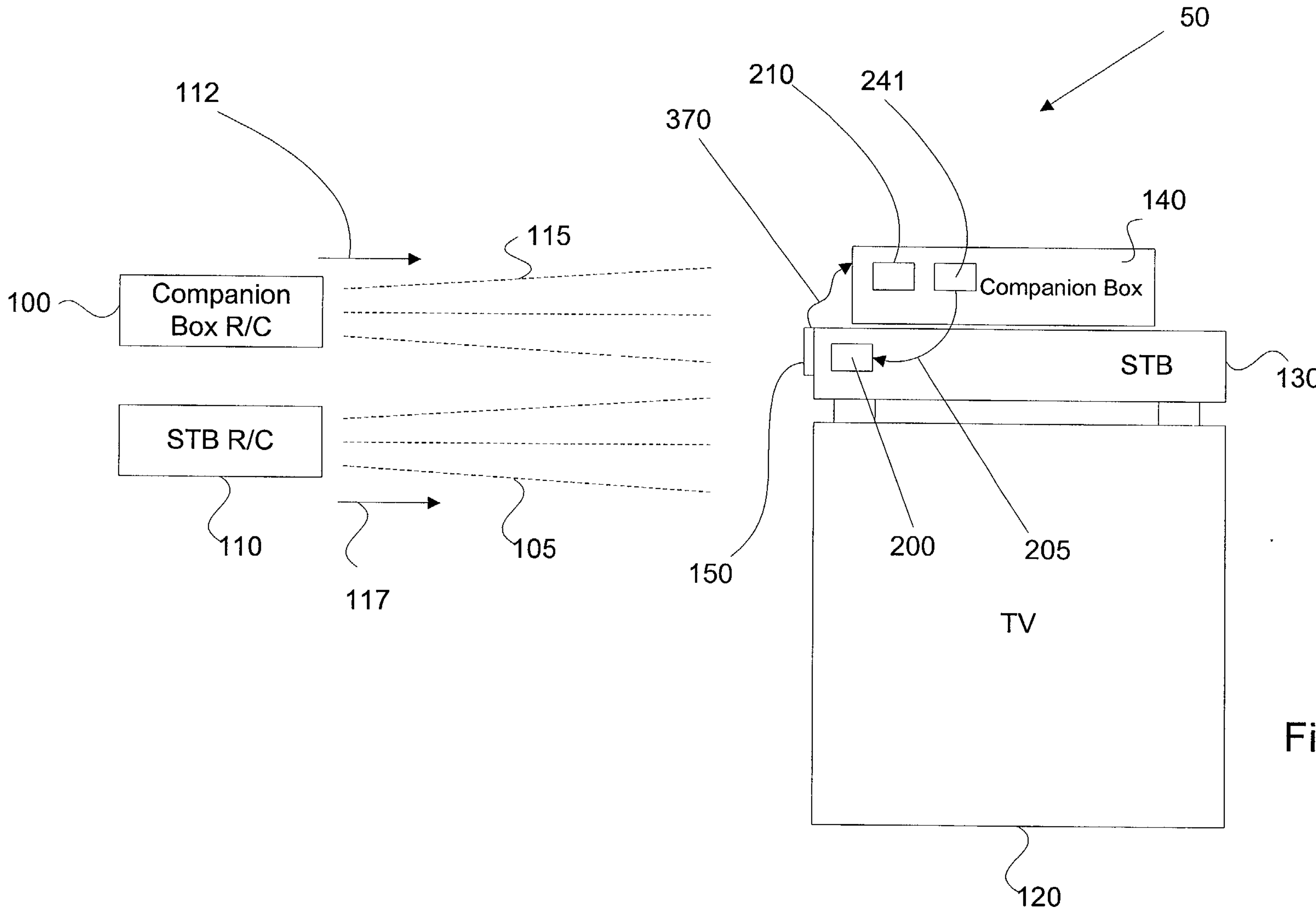


50
112
370
210
241
140
115
100
Companion Box R/C
Companion Box
STB
130
STB R/C
110
105
117
150
200
205
TV
120

Figure 1

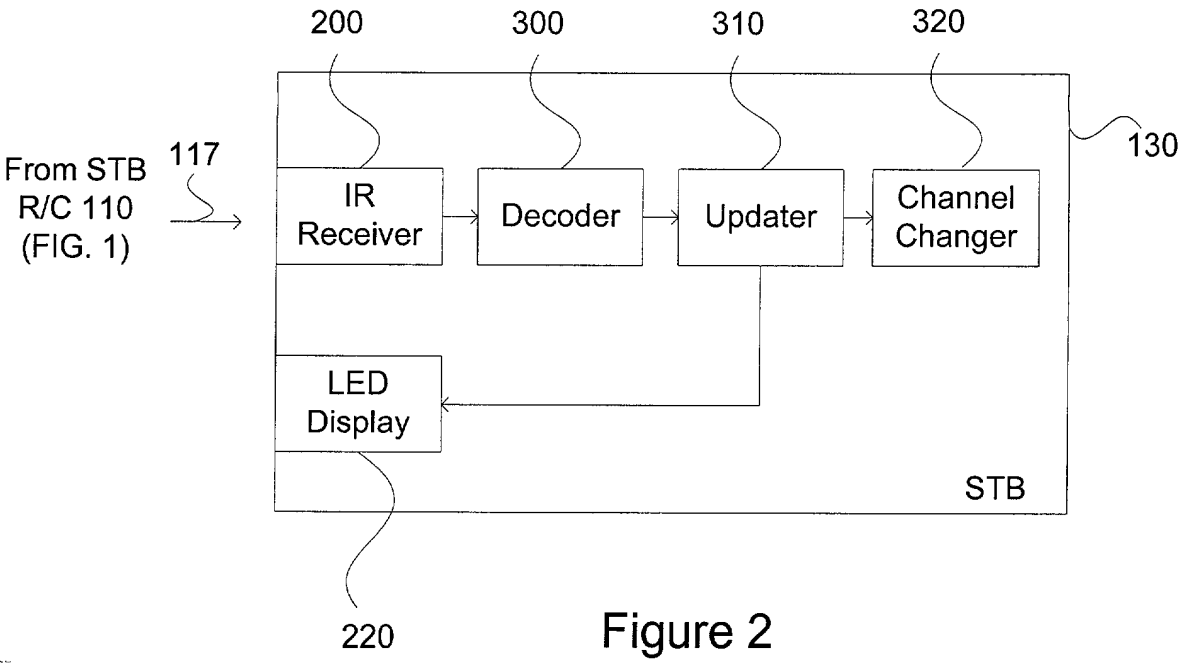

200
300
310
320
From STB
R/C 110
(FIG. 1)
117
IR
Receiver
Decoder
Updater
Channel
Changer
130
LED
Display
STB
220

Figure 2

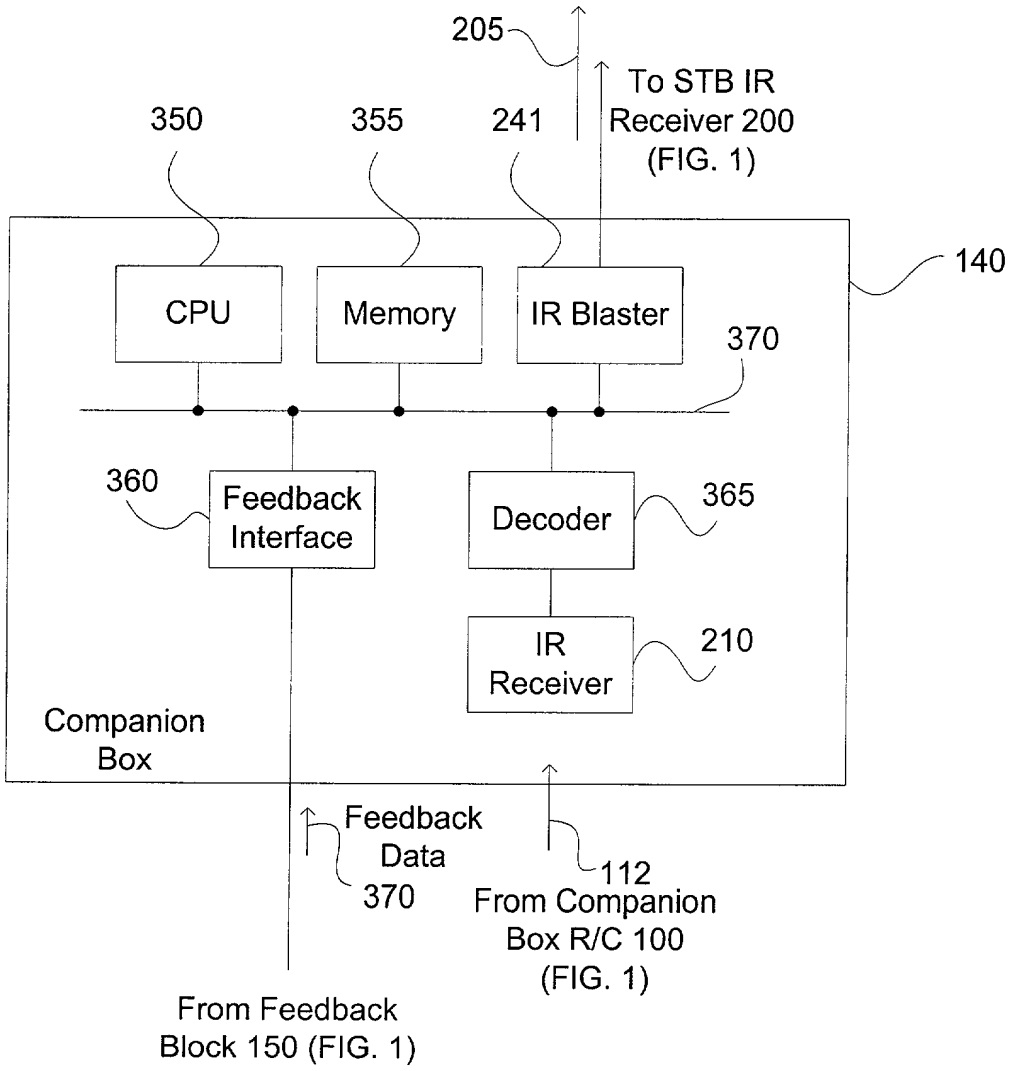
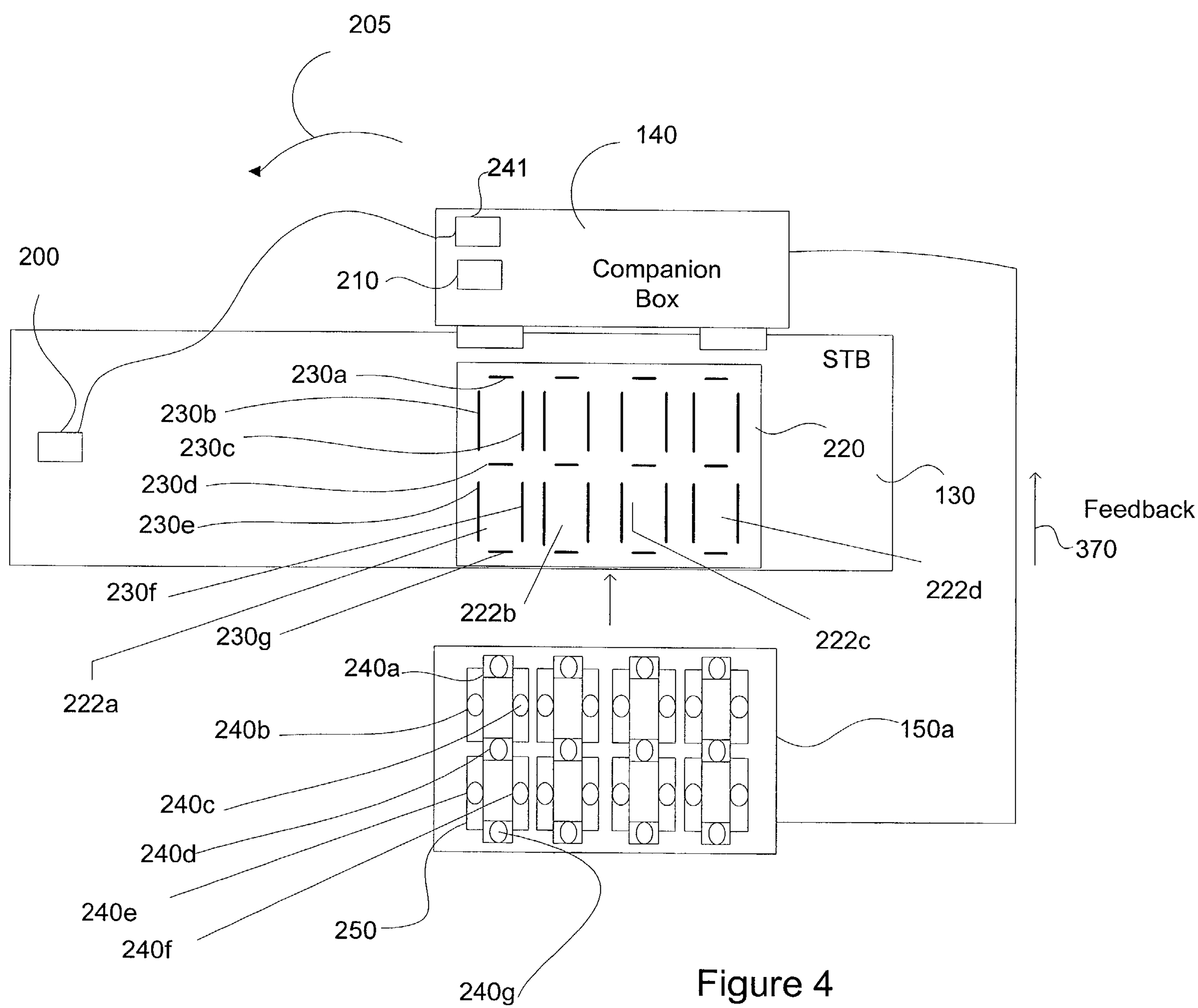

205
To STB IR Receiver 200 (FIG. 1)
350
355
241
140
CPU
Memory
IR Blaster
370
360
Feedback Interface
Decoder
365
IR Receiver
210
Companion Box
Feedback Data
370
112
From Companion Box R/C 100 (FIG. 1)
From Feedback Block 150 (FIG. 1)

Figure 3



205
140
241
200
210
Companion Box
STB
230a
230b
230c
230d
230e
230f
230g
220
130
Feedback
370
222a
222b
222c
222d
240a
240b
240c
240d
240e
240f
240g
250
150a

Figure 4

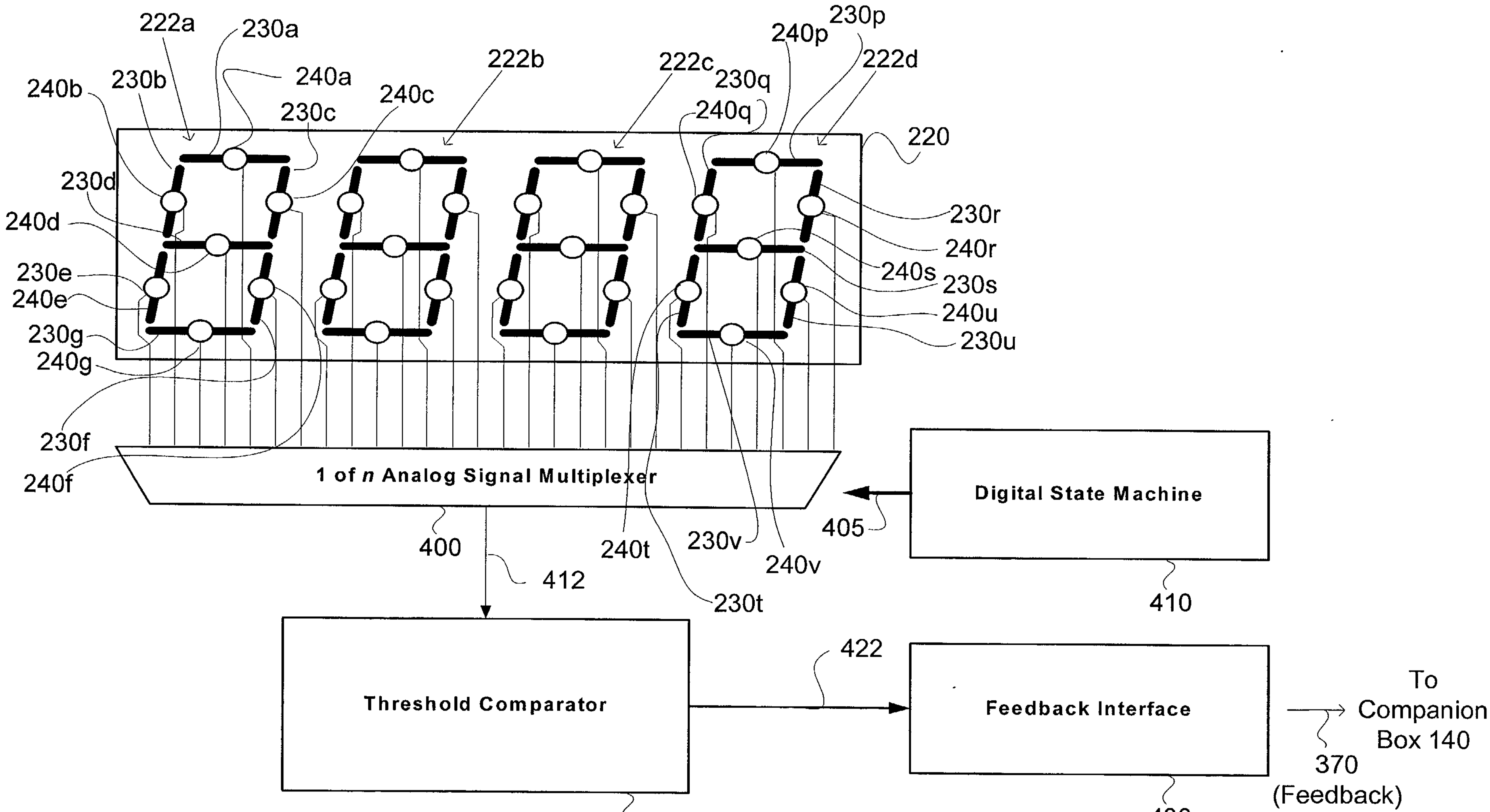

222a
230a
240a
222b
222c
230q
240q
240p
230p
222d
220
240b
230b
230c
240c
230d
240d
230e
240e
230g
240g
230f
240f
230r
240r
240s
230s
240u
230u
1 of n Analog Signal Multiplexer
400
412
240t
230v
240v
230t
405
Digital State Machine
410
Threshold Comparator
420
422
Feedback Interface
430
To
Companion
Box 140
370
(Feedback)

Figure 5

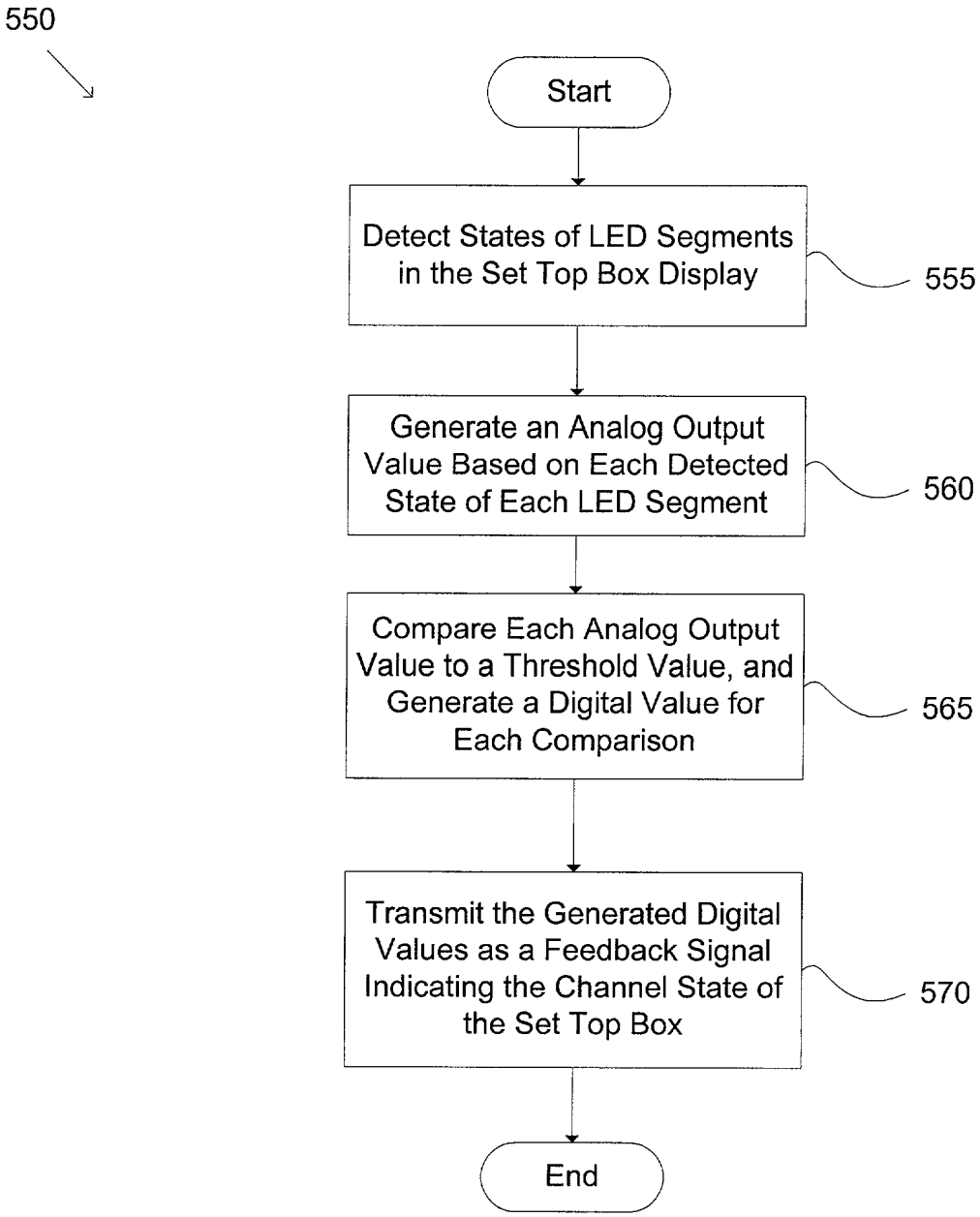
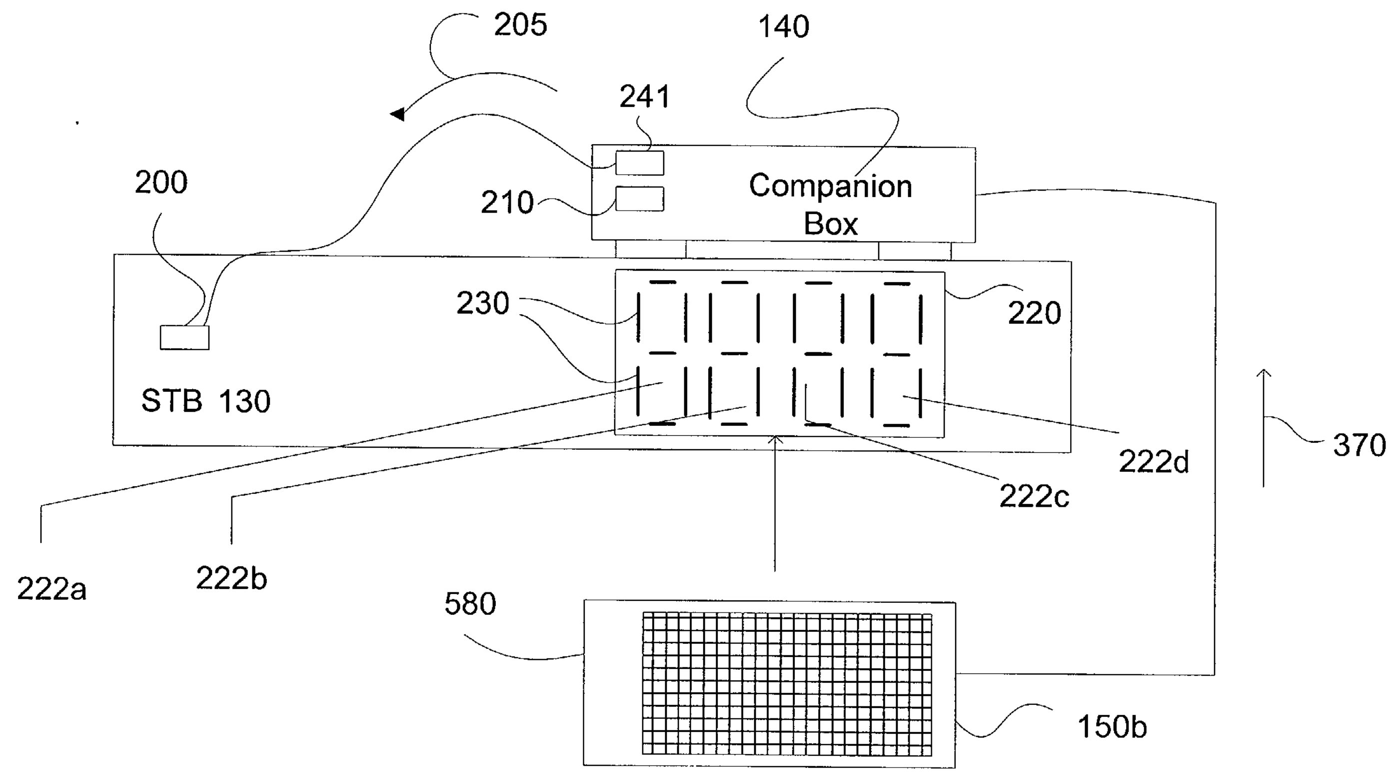

550
Start
Detect States of LED Segments in the Set Top Box Display
555
Generate an Analog Output Value Based on Each Detected State of Each LED Segment
560
Compare Each Analog Output Value to a Threshold Value, and Generate a Digital Value for Each Comparison
565
Transmit the Generated Digital Values as a Feedback Signal Indicating the Channel State of the Set Top Box
570
End

Figure 6



205
140
241
200
210
Companion
Box
230
220
STB 130
222a
222b
222c
222d
370
580
150b

Figure 7

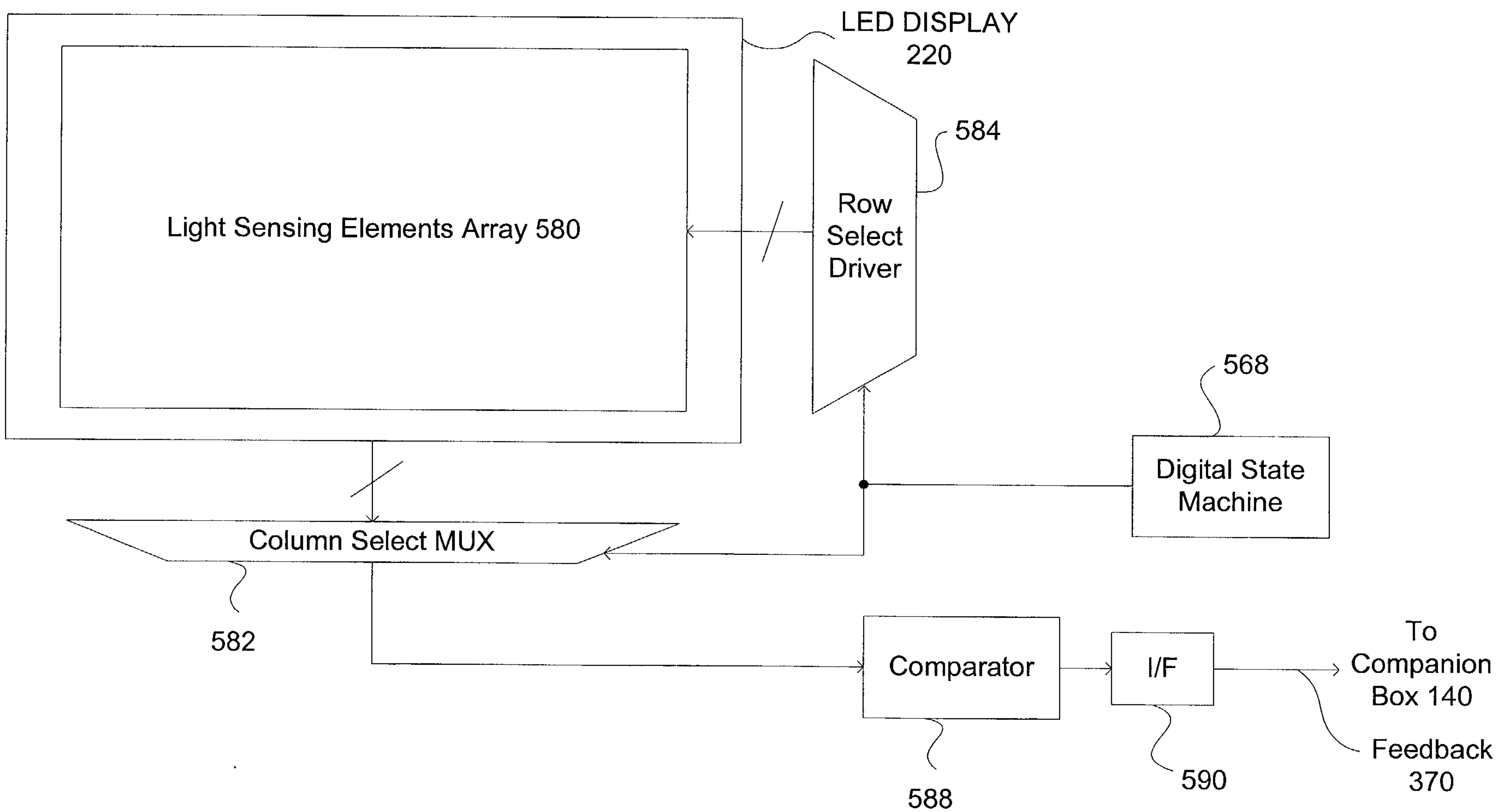

LED DISPLAY
220
Light Sensing Elements Array 580
Row
Select
Driver
584
568
Digital State
Machine
Column Select MUX
582
Comparator
588
I/F
590
To
Companion
Box 140
Feedback
370

Figure 8

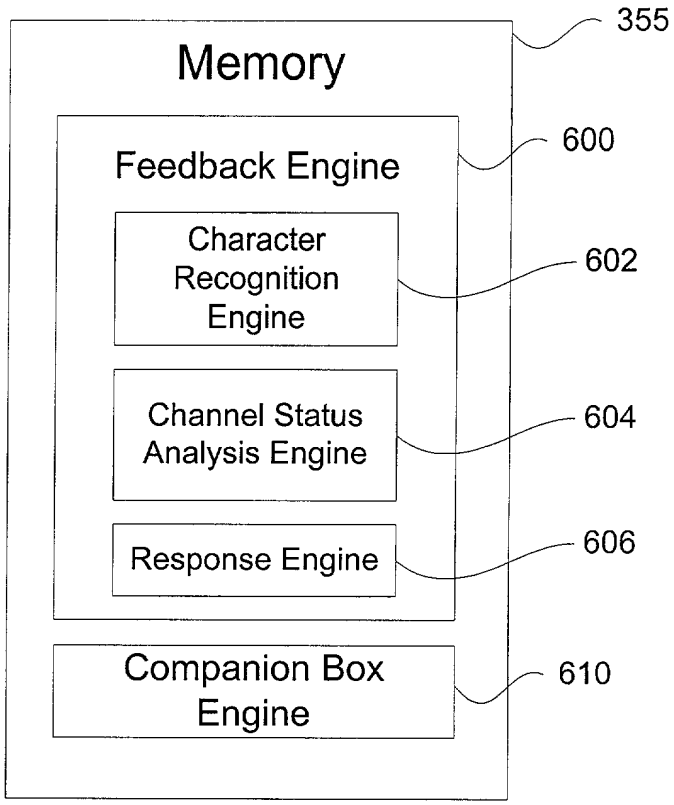

Memory
355
Feedback Engine
600
Character Recognition Engine
602
Channel Status Analysis Engine
604
Response Engine
606
Companion Box Engine
610

Figure 9

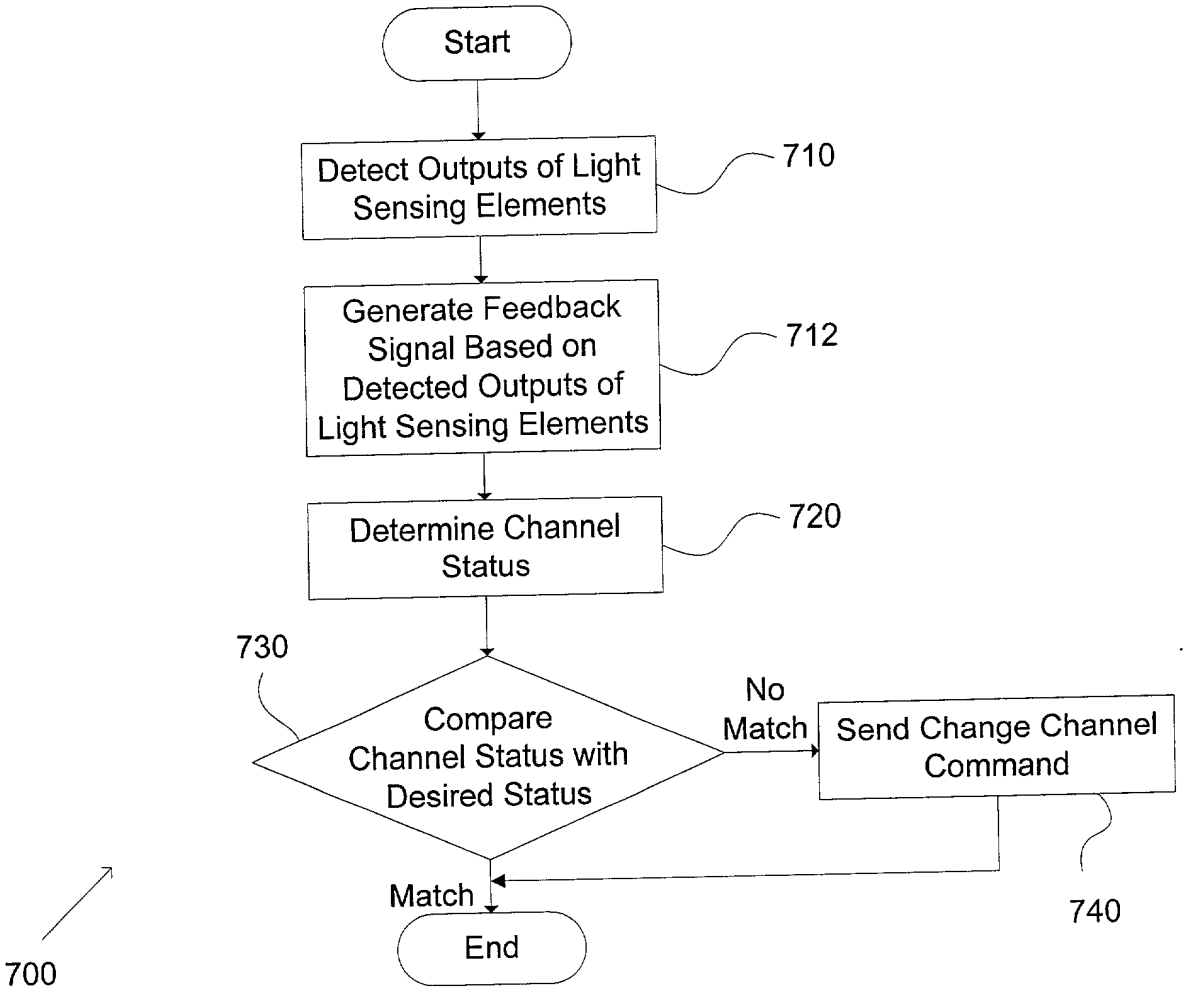

Start
Detect Outputs of Light Sensing Elements
710
Generate Feedback Signal Based on Detected Outputs of Light Sensing Elements
712
Determine Channel Status
720
730
Compare Channel Status with Desired Status
No Match
Send Change Channel Command
740
Match
End
700

Figure 10